

CLAIMS

1. A stump grubber (10, 50) comprising a frame (14, 54) incorporating coupling means (13, 53) to couple the stump grubber to a work machine (12, 52), and, supported on the frame,
- gripping means (32, 34, 36, 70) to grip a stump (38),
 - a blade (18, 58) arranged to cut downwards to sever roots (46) around the stump (38),
 - power means (24, 56) to move the gripping means (32, 34, 36, 70) and the cutting blade (18, 58) relative to each other in at least a substantially vertical direction so that the cutting blade (18, 58) is arranged to be downwardly movable relative to the gripping means (32, 34, 36, 70), and the gripping means (32, 34, 36, 70) are arranged to be upwardly movable relative to the cutting blade (18, 58) in order to lift the stump (38) from the ground (44),
- characterised in that the gripping means (32, 34, 36, 70) for gripping the stump (38) comprise four or more spikes or blades (32, 34, 36, 71–75) arranged to penetrate into the stump (38).
2. A stump grubber according to claim 1, characterised in that the cutting blade (18) is arranged to be at least mainly immovable vertically relative to the frame (14).
3. A stump grubber according to claim 1, characterised in that the gripping means (70) are arranged to be at least mainly immovable vertically relative to the frame (54).
4. A stump grubber according to claim 1, characterised in that the cutting blade (18, 58) comprises a blade that is at least mainly cylindrical in form.
5. A stump grubber according to claim 1, characterised in that the power means (24, 56) are attached to the frame (54) and/or
- the gripping means (32, 34, 36, 70) or
 - the cutting blade (18, 58)

by means of a joint (57) that allows the power means to move relative to the frame (54), the gripping means (32, 34, 36, 70) or the cutting blade (18, 58) in a direction other than the direction of the force generated by the power means.

5 6. A stump grubber according to claim 1, **characterised** in that it furthermore comprises pivoting means (27, 28, 30, 67, 68, 69) to pivot the gripping means (32, 34, 36, 70) relative to the frame (14, 54) between at least two positions, namely an open position, where the gripping means (32, 34, 36, 70) are intended to be out of contact with the stump (38), and a closed position, where the gripping means (32,
10 34, 36, 70) are intended to be in contact with the stump (38) and to have a grip on the stump (38).

7. A stump grubber according to claim 6, **characterised** in that the pivoting means include hinge members (27, 67, 69) and power members (28, 30, 68) to pivot the
15 gripping means (32, 34, 36, 70) relative to the frame (14, 54).

8. A stump grubber according to claim 1, **characterised** in that the spikes or blades (32, 34, 71–75) are formed in such a way as to slit the stump (38) and, thus to split the stump (38).

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9. A stump grubber according to claim 1, **characterised** in that the spikes or blades (32, 34) are coarsely serrated on their cutting side (48).

10. A stump grubber according to claim 1, **characterised** in that two blades (32,
25 34, 71–75) are arranged at least almost on opposite sides of the apparatus (10, 50) to pivot around parallel pivot axes (27, 67)

- asymmetrically so that the said blades are arranged to pass each other in the closed position, or
- symmetrically so that the said blades are arranged to be aligned in the closed
30 position.

11. A stump grubber according to claim 1, **characterised** in that the gripping means comprises two gripping means (70) arranged on opposite sides of the

apparatus (50) to pivot around mainly parallel pivot axes (67), both of which gripping means comprise no less than three blades or spikes (71–75) arranged to be mainly immovable relative to one another.

- 5 12. A stump grubber according to claim 11, **characterised** in that the blades or spikes (71–75) of one gripping means (70) are arranged along a distance, measured in the direction of their pivot axis (67), of no less than 200 mm, preferably no less than 400 mm and even more preferably no less than 600 mm or no less than 800 mm.

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13. A method for grubbing stumps (38) with a stump grubber (10, 50) coupled to the lifting means (12, 52) of a work machine, with gripping means (32, 34, 36, 70) and a cutting blade (18, 58) supported on the frame (14, 54) of the stump grubber, and in which method

- 15 - the stump grubber (10, 50) is positioned above the stump (38) with the help of the lifting means (12, 52) of the work machine,
- the stump (38) is firmly gripped by the gripping means (32, 34, 36, 70) at the side of the stump (38), at no less than two points on the stump (38),
- the cutting blade (18, 58) is positioned beside the stump (38) in an at least
20 substantially vertical position,
- the stump (38) is lifted upwards and roots growing out of the stump are severed by moving the cutting blade (18, 58) and gripping means (32, 34, 36, 70) relative to each other so that the cutting blade (18, 58) is moved downwards relative to the gripping means (32, 34, 36, 70) and the gripping
25 means (32, 34, 36, 70) are moved upwards relative to the cutting blade (18, 58),

characterised in that

- the stump (38) is gripped by forcing spikes or blades (32, 34, 36, 71–75) into the stump at no less than four points on the stump (38).

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14. A method according to claim 13, **characterised** in that in this method, the cutting blade (18) is kept at least mainly immovable in the vertical direction relative to the frame (14).

15. A method according to claim 13, **characterised** in that in this method, the gripping means (70) are kept at least mainly immovable in the vertical direction relative to the frame (54).

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16. A method according to claim 13, **characterised** in that in this method, the stump (38) is supported (40) against the stump grubber, also from above.

10 17. A method according to claim 13, **characterised** in that the gripping means (32, 34) incorporate cutting blades (48), and that in this method, the gripping means (32, 34, 36, 71–75) are pressed so deep into the stump (38) at its side that the stump (38) is at least partially split.

15 18. A method according to claim 13, **characterised** in that the release of the stump (38) and the severing of the roots (46) is carried out using only the stump grubber's own power means (24, 56).

19. The use of a stump grubber (10) according to claim 1 for preventing the spread of root rot.

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20. A method for the prevention of fungus disease, such as root rot, prior to the planting of a seedling, **characterised** in that in this method, a stump (38) and the roots (46) surrounding the stump for a distance around the stump (38) are removed from the ground (44), wherein an incision is made at least for the most part around the stump (38) and directed vertically downwards into the ground (44), to a certain depth and, simultaneously, the stump (38) is lifted mainly vertically upwards at no less than four points.

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